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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/675,991 | 09/29/2000 | Randy B. Osborne | 042390.P8456 | 1740 |

7590

08/06/2004

Bradley J Bereznak
Blakely Sokoloff Taylor & Zafman LLP
7th Floor
12400 Wilshire Boulevard
Los Angeles, CA 90025-1026

EXAMINER

KING, JUSTIN

ART UNIT PAPER NUMBER

2111

DATE MAILED: 08/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

SS

| | | | |
|------------------------------|-------------------------------|-----------------------------------|--|
| Office Action Summary | Application No. 09/675,991 | Applicant(s) OSBORNE, RANDY B. | |
| | Examiner Justin I. King | Art Unit 2111 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>11</u> . | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 24-29 and 43-47 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The amended portion in claims 24 and 43 "an amount of pending read request for the first agent" cannot be found in the specification. Claims 25-29 and 44-47 are rejected because they incorporate claims 24 and 43's limitations.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 24-28, and 43-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of the Thompson (U.S. Patent No. 5,392,404), LaViolette et al. (U.S. Patent No. 4,602,327), Metz, Jr. et al. (U.S. Patent No. 5,448,701), and the Applicant's admitted prior art.

Referring to claims 24 and 43: Thompson discloses transferring read data from a first agent, issuing a preempt signal from a second agent (abstract, figure 1). Thompson discloses that preemption is decided based on the predetermined priority (column 4, lines 40-49); thus, Thompson determines whether to allow preemption of the current bus control based at least in part on the pending request.

Thompson discloses relinquishing bus control either immediately or according to a predetermined timed sequence (column 2, lines 66-69); thus, Thompson discloses determining a suitable preemption point. And when Thompson preempts the currently executing task, it temporarily halts the task.

Thompson does not explicitly disclose transferring a read data request from the second agent to the first agent, but Thompson discloses transactions among a plurality of agents (abstract); thus, the transferring a read data request from the second agent to the first agent is anticipated within the scope of Thompson's disclosure. Thompson also does not explicitly disclose returning the control back to the processing been preempted, an "Official Notice" is

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taken that it is well known within the scope of a person with ordinary skill in computer art to resume the previous process, and the substance of this "Official Notice" is not challenged by the Applicant in the response dated April 19, 2004. Furthermore, LaViolette supports this Official Notice and discloses it is known to process tasks in the order of their associated priorities and the preempted task will be resumed accordingly to its ranked priority (abstract).

Neither Thompson nor LaViolette explicitly discloses a half-duplex bus, but as the specification states, the half-duplex bus is a well-known practice.

Neither Thompson nor LaViolette explicitly discloses the amount of pending request. Metz teaches that it is known to assign a higher priority to the requestor with higher amount of pending requests (abstract, the pending requests in adaptor's I/O buffer). Metz teaches that it is known to assign a higher priority to the requestor with more pending requests in order to preventing the overflow.

Hence, it would have been obvious to one having ordinary skill in the computer art at the time Applicant made the invention to adapt the LaViolette's teaching, Metz's teaching, and the half-duplex bus design to Thompson because LaViolette teaches one to prioritize tasks for the optimum efficiency, Metz teaches on to prevent any overflow, and the half-duplex bus is a well-known industrial practice for lowering system cost.

Referring to claim 25 and 44: The argument above applies; furthermore, Thompson discloses a memory controller (figure 1, structure 22).

Referring to claim 26 and 45: Claim 25's argument applies; furthermore, Thompson discloses I/O devices (figure 1, structures 24).

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Referring to claim 27 and 46: Neither Thompson nor LaViolette discloses a threshold in considering preemption. Metz discloses a threshold in considering priority and preemption (abstract). Hence, it would have been obvious to one having ordinary skill in the computer art at the time Applicant made the invention to adapt the LaViolette and Metz's teaching and the half-duplex bus design to Thompson because LaViolette and Metz teach one to prioritize tasks and threshold value for the optimum efficiency and the half-duplex bus is a well-known industrial practice for lowering system cost.

Referring to claims 28 and 47: Metz's buffer threshold is equivalent to the cache line boundary.

4. Claims 30-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of the Thompson, LaViolette, and the Applicant's admitted prior art.

Referring to claim 30: Thompson discloses transferring read data from a first agent, issuing a preempt signal from a second agent (abstract, figure 1). Thompson discloses that preemption is decided based on the predetermined priority (column 4, lines 40-49); thus, Thompson determines whether to allow preemption of the current bus control based at least in part on the pending request.

Thompson discloses relinquishing bus control either immediately or according to a predetermined timed sequence (column 2, lines 66-69); thus, Thompson discloses determining a suitable preemption point. And when Thompson preempts the currently executing task, it temporarily halts the task.

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Thompson does not explicitly disclose transferring a read data request from the second agent to the first agent, but Thompson discloses transactions among a plurality of agents (abstract); thus, the transferring a read data request from the second agent to the first agent is anticipated within the scope of Thompson's disclosure. Thompson also does not explicitly disclose returning the control back to the processing been preempted, an "Official Notice" is taken that it is well known within the scope of a person with ordinary skill in computer art to resume the previous process. Furthermore, LaViolette supports this Official Notice and discloses it is known to process tasks in the order of their associated priorities and the preempted task will be resumed accordingly to its ranked priority (abstract).

Neither Thompson nor LaViolette explicitly discloses a half-duplex bus, but as the specification states, the half-duplex bus is a well-known practice.

Hence, it would have been obvious to one having ordinary skill in the computer art at the time Applicant made the invention to adapt the LaViolette's teaching and the half-duplex bus design to Thompson because LaViolette teaches one to prioritize tasks for the optimum efficiency and the half-duplex bus is a well-known industrial practice for lowering system cost.

Referring to claim 31: Since Thompson's control logic will compare both pending request and current process, Thompson discloses sampling the first and second signals.

Referring to claim 32: Metz discloses the read starvation (abstract).

Referring to claim 33: Metz's buffer threshold is equivalent to the cache line boundary.

Referring to claims 34-35: Although none of prior arts discloses one clock period as claimed, such limitation are merely a matter of design choice and would have been obvious. The prior art teaches preemption with priority consideration. The limitation of one clock period does

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not define a patentably distinct invention over that in prior arts since both the invention as a whole and combined prior arts are directed to preemption with proper priority consideration. The number of clock period is inconsequential for the invention as a whole and presents no new or unexpected results, so long as the preemption is successfully carried out. Therefore, to have one clock period as claimed would have been a matter of obvious design choice to one of ordinary skill in the computer art.

Referring to claims 36-37: Thompson's memory controller includes an arbiter executing an arbitration protocol (column 2, lines 35-36).

Referring to claim 38-39: Claim 30's argument applies; furthermore, Thompson discloses the arbitration line (column 2, last paragraph) and DMA request line (column 4, line 55), which are the preempt line and request line respectively.

Referring to claim 40: Metz's buffer threshold is equivalent to the cache line boundary.

Referring to claim 41: The argument above applies; furthermore, Thompson discloses a memory controller (figure 1, structure 22).

Referring to claim 42: Thompson discloses I/O devices (figure 1, structures 24).

5. Claims 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Thompson in view of LaViolette, Metz, and in further view of Leger et al. (U.S. Patent No. 5,771,356), and the Applicant's admitted prior art.

Referring to claim 29: Leger discloses both threshold and a casual control for I/O preemption (abstract). Leger's casual control allows transferring of a limited of transaction before handing over the control accordingly to the priority. Hence, it would have been obvious

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to one having ordinary skill in the computer art to adapt Leger's teaching to Thompson and Metz because Leger teaches one to select a proper cut-off point on the current process for data integrity before handing over the control.

Response to Arguments

6. In response to Applicant's argument that the Office Notice is irrelevant (Remark, page 7, last paragraph), and Applicant further argues that this does not mean an element of resumption is never novel, such as the claim 24's determination of the suitable point for preemption (Remark, page 8, 3rd paragraph): The substance of the Office Notice is relevant to the last element of the claim, which is the resuming previous transaction. The time that a system chooses to resume the previous transaction is the claimed determining a suitable point. The claim 24 merely states determining the suitable point, it does not provide any distinct means to determine the suitable point.

7. In response to Applicant's argument that LaViolette only indicates that resumption in the reference is known, it does not teach the resumption of computer processes in general (Remark, page 9, lines 5-8): LaViolette states data transferring and the resumption of the processes in the abstract; thus, it does teach the resumption of computer processes (read/write) in general.

LaViolette's processes are the computer processes in general. It is unclear how Applicant can argue that the LaViolette does not teach the resumption of computer processes in general while Applicant admits that LaViolette does teach that the resumption of the processes is known.

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Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

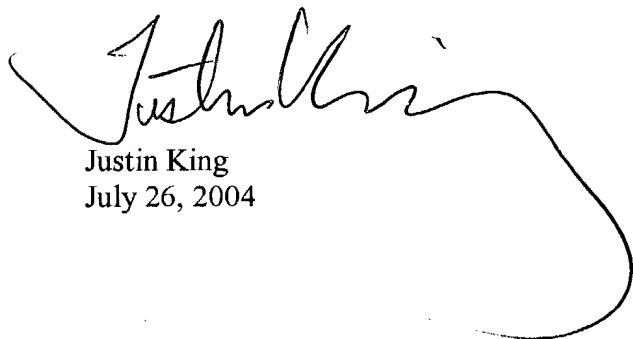
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin I. King whose telephone number is 703-305-4571. The examiner can normally be reached on Monday through Friday, 9:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart can be reached on 703-308-3110. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-5631.



Justin King
July 26, 2004



XUAN M. THAI
PRIMARY EXAMINER

TC2100